What is claimed is:

1. A method of synchronization between a plurality of nodes connected to a media, each node including a clock, said method comprising the steps of:

listening to the media for a predetermined length of time while attempting to detect synchronization signals from other nodes;

if synchronization signals are detected, deriving a timing signal from said synchronization signals;

aligning the clock in a particular node in accordance with said timing signal;

transmitting synchronization signals into said media on a random basis at specific points in time;

maintaining synchronization with other nodes by listening to said media when said synchronization signal is not transmitted and attempting to detect synchronization signals transmitted by other nodes; and

if synchronization signals are not detected, transmitting synchronization pulses onto said media on a random basis at particular points in time and waiting for other nodes to join said network.

2. The method according to claim 1, wherein said step of listening is performed at least upon wake-up of a node.

3. The method according to claim 1, wherein said synchronization signal comprises a sequence of single tone pulses, each pulse having a different frequency.

4. The method according to claim 1, wherein said synchronization signal comprises a wide band bi-phase sequence.

5. The method according to claim 4, wherein the each node is adapted to transmit a different bi-phase sequence.

6. The method according to claim 4, wherein said wide band bi-phase sequence is adapted to have good autocorrelation properties.

7. The method according to claim 1, wherein said step of aligning comprises providing a phase lock loop adapted to receive said timing signal and operative to maintain said clock in synchronization with said timing signal.

8. The method according to claim 1, wherein said step of transmitting comprises the step of selecting a number at random and deciding to transmit said synchronization signal if the number selected is greater than a predetermined amount chosen in accordance with a desired duty cycle.

9. The method according to claim 8, wherein said duty cycle is approximately 50%.

10. The method according to claim 1, wherein said synchronization signals, when they are to be transmitted, are transmitted onto said media at the same cyclical point in time.

11. The method according to claim 1, wherein said synchronization signals, when they are to be transmitted, are transmitted onto said media at the same cyclical point in time before the body of a frame is transmitted.

12. A method of media capture by a node connected to a media and adapted to run a protocol, said method comprising the steps of:

determining whether said media is available;

if said media is not available, waiting until said media is available before starting a new transmission;

once said media is available, establishing a connection between a source node and a destination node in accordance with said protocol;

transmitting a frame occupation signal from both said source node and said destination node; and

if said connection was successfully established, maintaining said connection by periodic transmission of said frame occupation signal by said source node and said destination node.

13. The method according to claim 12, wherein said step of determining whether said media is available comprises listening for the presence of said frame occupation signal.

14. The method according to claim 12, wherein said media is determined to be available when no frame occupation signals are detected on said media.

15. The method according to claim 12, wherein said frame occupation signal is periodically transmitted onto said media at the same point in time.

16. A media access controller for controlling access by a node to a media connected thereto, comprising:

a synchronization signal generator adapted to randomly generate a synchronization signal and subsequently transmit said synchronization signal onto said media during a predetermined synchronization time slot;

a synchronization mechanism adapted to achieve synchronization between a particular node and other nodes, said synchronization mechanism operative to control the generation of said synchronization signal by said synchronization signal generator;

a timing mechanism operative to produce a timing signal derived from a plurality of received synchronization signals;

a frame occupation signal generator adapted to generate a frame occupation signal when said node obtains access to said media; and

a media access controller for coordinating access to said media, wherein access to said media is not permitted as long as the presence of a frame occupation signal is detected on said media.

17. The controller according to claim 16, further comprising a transmit/receive interface adapted to interface said media access controller to transmit circuitry and receive circuitry.

18. The controller according to claim 16, further comprising a transmit/receive controller adapted to manage the transmission and reception of data between said an application processor and transmit circuitry and receive circuitry.

19. The controller according to claim 16, wherein said timing mechanism is adapted to average the timing of a plurality of individual synchronization signals transmitted by other nodes.

20. The controller according to claim 19, wherein said averaging is achieved by time averaging the output of a matched filter adapted to said synchronization signal.

21. The controller according to claim 16, wherein said synchronization mechanism comprises processing means operative to:

listen to the media for a predetermined length of time while attempting to detect synchronization signals from other nodes;

if synchronization signals are detected, derive a timing signal from said synchronization signals;

align the clock in a particular node in accordance with said timing signal;

transmit synchronization signals into said media on a random basis at specific points in time;

maintain synchronization with other nodes by listening to said media when said synchronization signal is not transmitted and attempting to detect synchronization signals transmitted by other nodes; and

if synchronization signals are not detected, transmit synchronization pulses onto said media on a random basis at particular points in time and waiting for other nodes to join said network.

22. The controller according to claim 16, wherein said frame occupation signal generator is adapted to periodically transmit said frame occupation signal onto said media at the same point in time.

23. A method of converging disparate synchronizations from a plurality of networks, said method comprising the steps of:

listening for synchronization signals;

if more than one synchronization signal is detected, transmitting a synchronization signal shifted in time for each group of synchronization signals detected;

nodes in each network adjusting their synchronization timing in response to said shifted synchronization signals; and

repeating said steps of transmitting and adjusting until unified synchronization is achieved among said plurality of networks.

24. The method according to claim 23, wherein said step of listening is performed at least upon wake-up of a node.

25. The method according to claim 23, wherein said synchronization signal comprises a sequence of single tone pulses, each pulse having a different frequency.

26. The method according to claim 23, wherein said synchronization signal comprises a wide band bi-phase sequence.

27. The method according to claim 26, wherein the each node is adapted to transmit a different bi-phase sequence.

28. The method according to claim 26, wherein said wide band bi-phase sequence is adapted to have good autocorrelation properties.

29. The method according to claim 23, wherein said step of adjusting comprises providing a phase lock loop adapted to maintain synchronization of a clock with synchronization signals received from other nodes.

30. The method according to claim 23, wherein said step of transmitting comprises the step of selecting a number at random and deciding to transmit said synchronization signal if the number selected is greater than a predetermined amount chosen in accordance with a desired duty cycle.

31. The method according to claim 30, wherein said duty cycle is approximately 50%.

32. The method according to claim 23, wherein said synchronization signals, when they are to be transmitted, are transmitted onto said media at the same cyclical point in time.

33. The method according to claim 23, wherein said synchronization signals, when they are to be transmitted, are transmitted onto said media at the same cyclical point in time before the body of a frame is transmitted.

34. A node connected to a media, comprising:

a media coupling circuit adapted to electrically interface said node to said media;

an application processor for executing an application program;

a media access controller comprising:

a synchronization signal generator adapted to randomly generate a synchronization signal and subsequently transmit said synchronization signal onto said media during a predetermined synchronization time slot;

a synchronization mechanism adapted to achieve synchronization between a particular node and other nodes, said synchronization mechanism operative to control the generation of said synchronization signal by said synchronization signal generator;

a timing mechanism operative to produce a timing signal derived from a plurality of received synchronization signals;

frame occupation signal generator adapted to generate a frame occupation signal when said node obtains access to said media; and

a media access controller for coordinating access to said media, wherein access to said media is not permitted as long as the presence of a frame occupation signal is detected on said media;

a transmit circuit adapted to receive a data stream from said media access controller for transmission onto said media; and

a receive circuit adapted to output a data stream received over said media to said media access controller.

35. The controller according to claim 34, wherein said timing mechanism is adapted to average the timing of a plurality of individual synchronization signals transmitted by other nodes.

36. The controller according to claim 35, wherein said averaging is achieved by time averaging the output of a matched filter adapted to said synchronization signal.

37. The controller according to claim 34, wherein said synchronization mechanism comprises processing means operative to:

listen to the media for a predetermined length of time while attempting to detect synchronization signals from other nodes;

if synchronization signals are detected, derive a timing signal from said synchronization signals;

align the clock in a particular node in accordance with said timing signal;

transmit synchronization signals into said media on a random basis at specific points in time;

maintain synchronization with other nodes by listening to said media when said synchronization signal is not transmitted and attempting to detect synchronization signals transmitted by other nodes; and

if synchronization signals are not detected, transmit synchronization pulses onto said media on a random basis at particular points in time and waiting for other nodes to join said network.

38. The controller according to claim 34, wherein said frame occupation signal generator is adapted to periodically transmit said frame occupation signal onto said media at the same point in time.

39. In a network including a plurality of nodes, a method of media access control for achieving coexistence of disparate nodes, said method comprising the steps of:

allocating a synchronization time slot dedicated to the transmission of synchronization signals;

allocating a frame occupation time slot dedicated to the transmission of frame occupation signals;

each node inserting a synchronization signal on a random basis during said synchronization time slot;

each node deriving timing from synchronization signals received from other nodes when that node is not transmitting said synchronization signal;

each node listening for the presence of frame occupation signals to determine whether said media is available; and

once a node detects said media is available, securing said media by transmitting said frame occupation signal during said frame occupation time slot.

40. The method according to claim 39, wherein portions of said plurality of nodes run different protocols.

41. The method according to claim 39, wherein portions of said plurality of nodes have different physical layers.

42. The method according to claim 39, wherein said synchronization signal comprises a sequence of single tone pulses, each pulse having a different frequency.

43. The method according to claim 39, wherein said synchronization signal comprises a wide band bi-phase sequence.

44. The method according to claim 43, wherein the each node is adapted to transmit a different bi-phase sequence.

45. The method according to claim 43, wherein said wide band bi-phase sequence is adapted to have good autocorrelation properties.

46. The method according to claim 39, wherein said step of transmitting comprises the step of selecting a number at random and deciding to transmit said synchronization signal if the number selected is greater than a predetermined amount chosen in accordance with a desired duty cycle.

47. The method according to claim 46, wherein said duty cycle is approximately 50%.